

Local Data Manager (LDM): Software to push data to **many receivers**

LDM4: 1993, first Internet usage

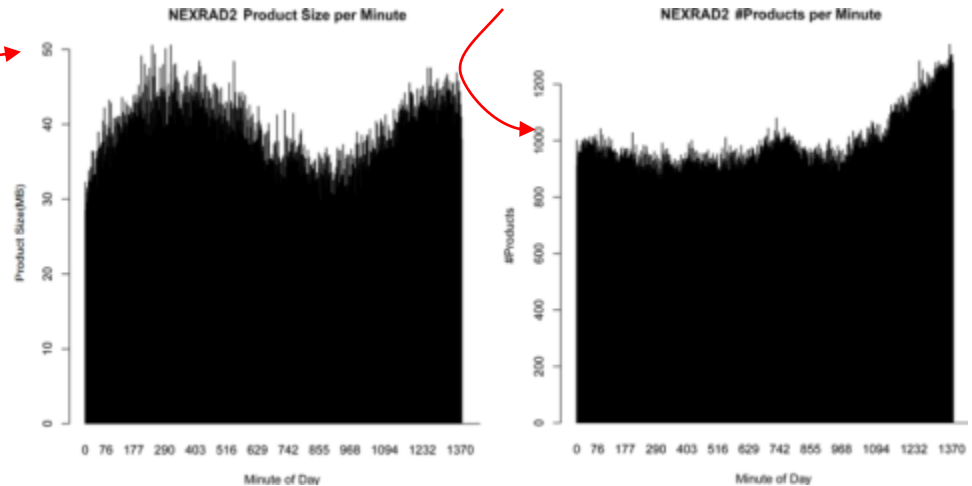
LDM6: current deployment

LDM7: our NSF CC project development

- Unidata Internet Data Distribution (IDD) pushes meteorology data to at least **560 computers** at 250 sites
- 30 data feeds provide radar, satellite, text bulletins, lightning, model forecasts, surface and upper air observations, ...
- UCAR receives over **20 GB/h**, 24/7 (usage is increasing).
- Transmits over **1 TB/h**, 24/7, with 99.999% reliability
- Uses RPC over **unicast TCP** connections
- **Application-layer multicast**

Size/min (50 MB)

products/min: 1000



Minute of day: 1440 mins

Radar data

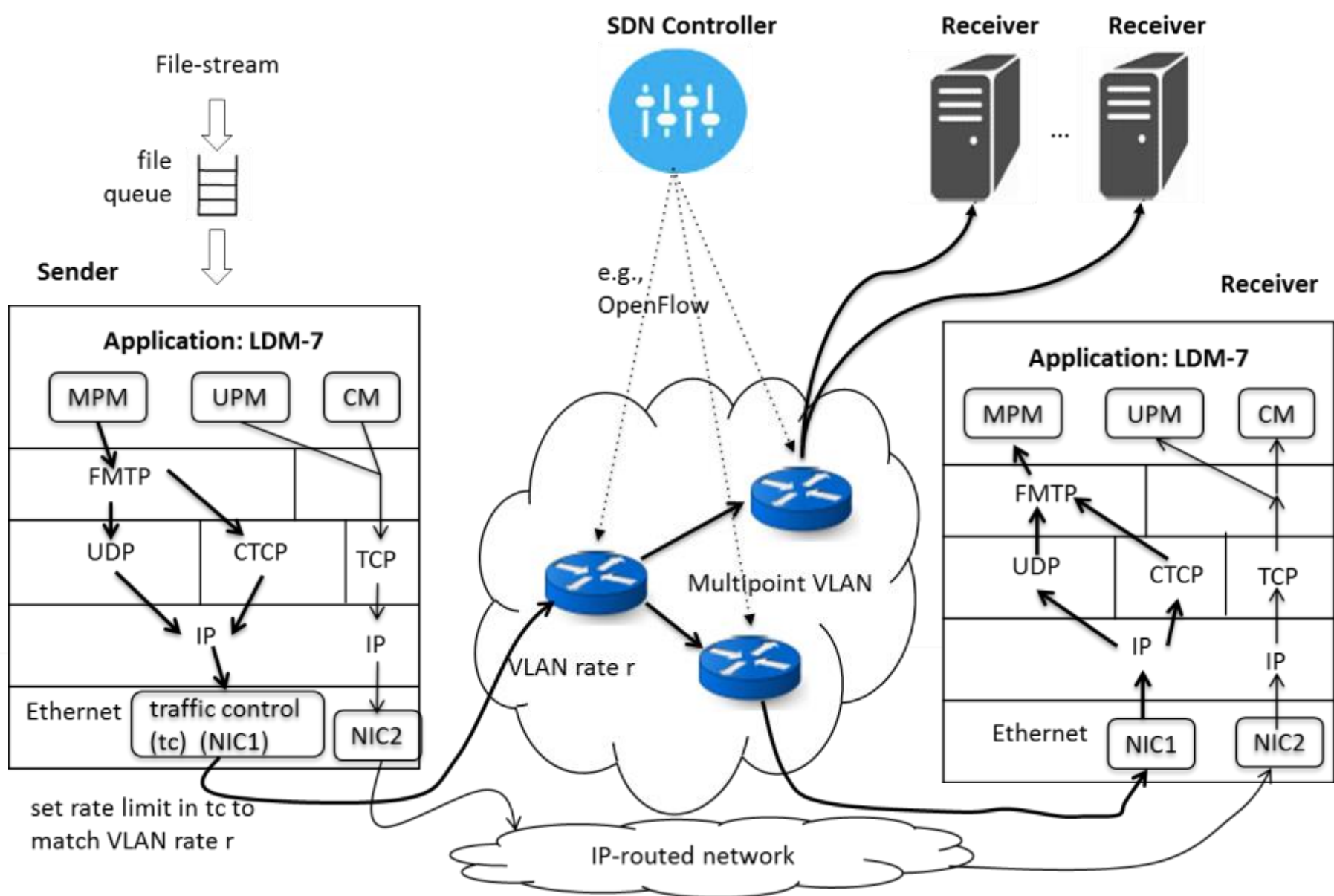
- Users of LDM: National Weather Service, THORPEX Interactive Grand Global Ensemble (TIGGE), NOAA, FAA, USGS, NASA, US military, Foreign Met offices, Global Internet Data Distribution (IDD)



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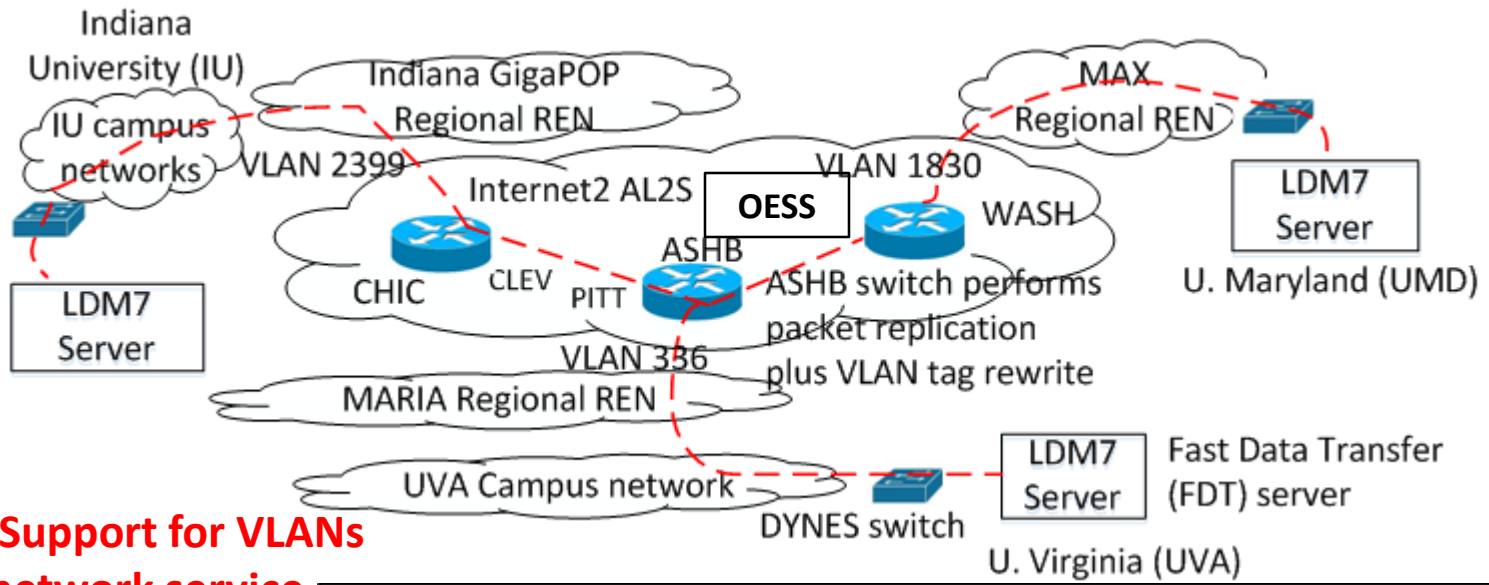
Challenge:

- As number of receivers \uparrow , traffic volume \uparrow , with LDM6, UCAR needs higher-speed WAN access, and larger sender clusters

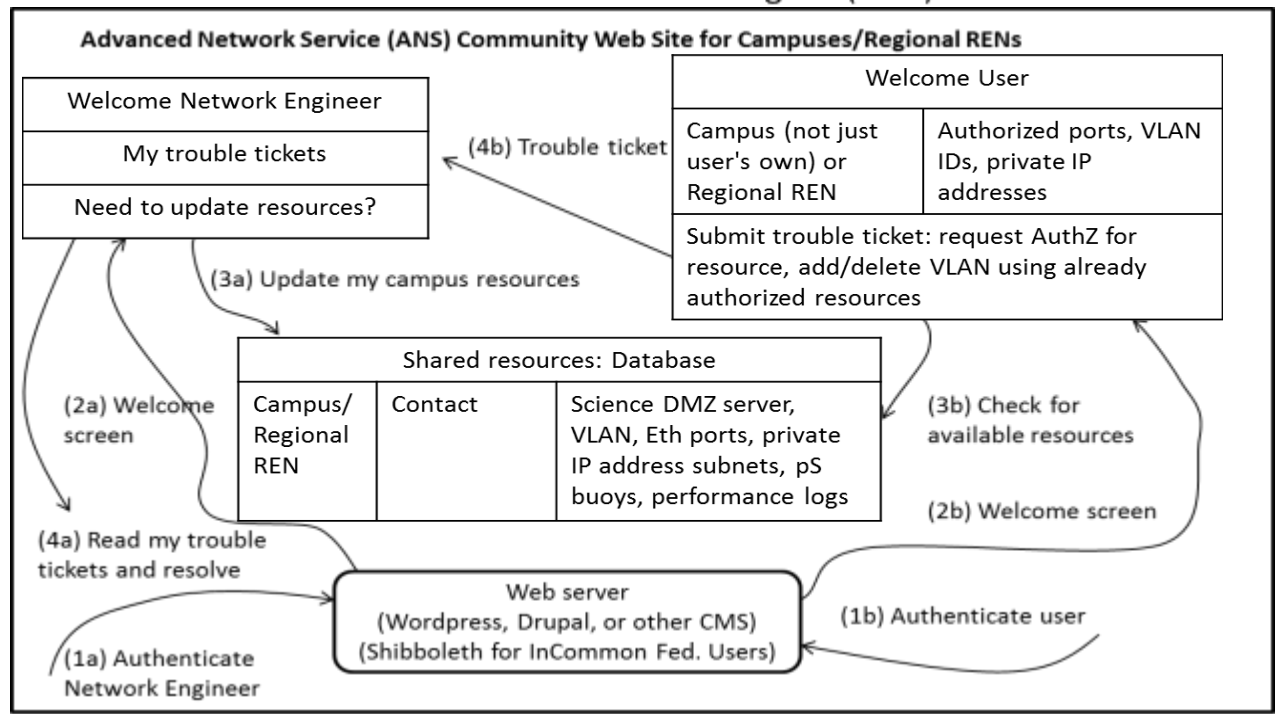
Solution:

- Multipoint VLAN; FMTP: reliable multicast transport; LDM7: LDM6 + FMTP; Tested on 5-point multidomain VLAN

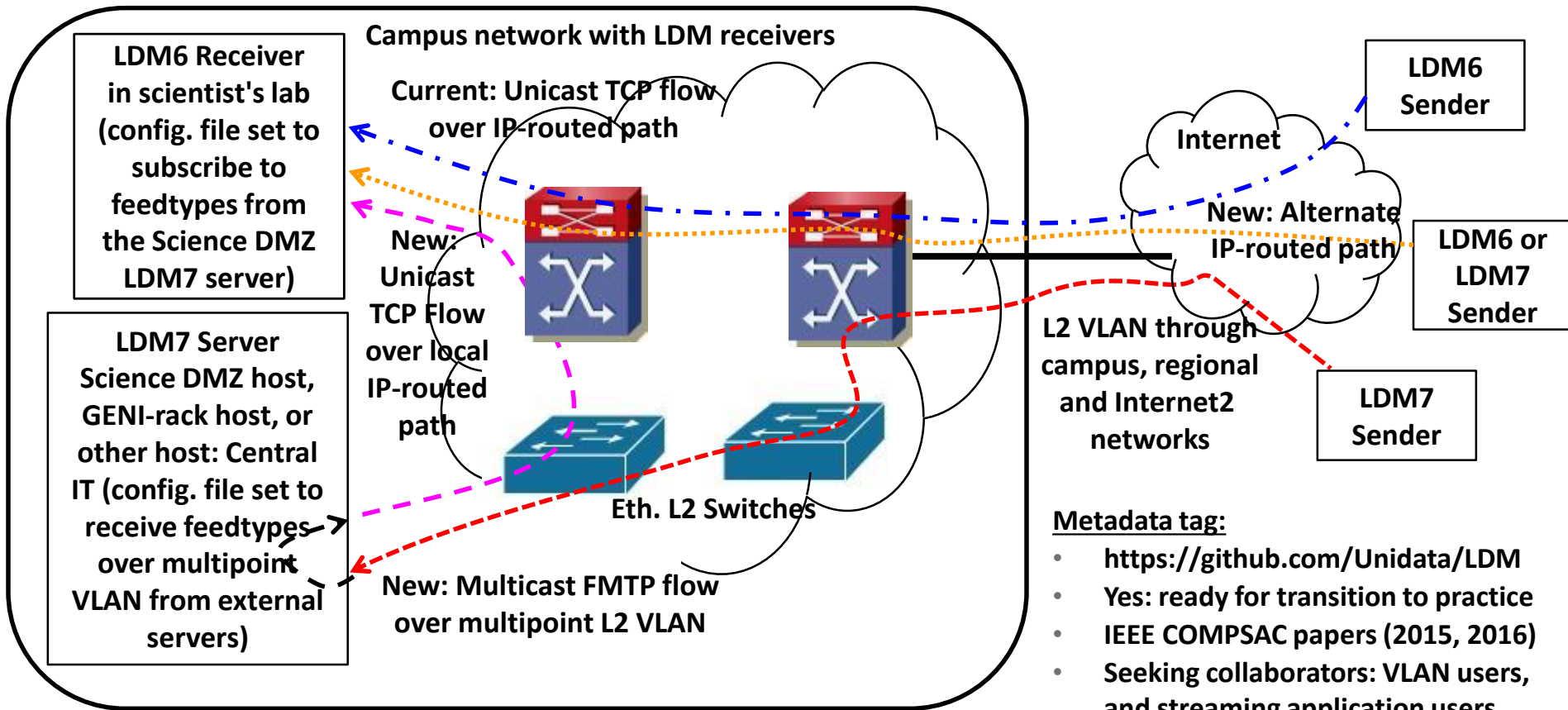




Challenge: Support for VLANs
Advanced network service
Dynamic L2 paths needed
Troubleshooting paths



Challenge: Integrate new network service under an entrenched application without interrupting scientific progress



Metadata tag:

- <https://github.com/Unidata/LDM>
- Yes: ready for transition to practice
- IEEE COMPSAC papers (2015, 2016)
- Seeking collaborators: VLAN users, and streaming application users
- Five UG research assistants
- Two MS thesis graduated
- New PhD student, Yuanlong Tan

